

Building Consensus and Implementing Change



Chapter Eleven

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11.1 Developing a Shared Vision

Successful implementation of Integrated Stormwater Management Plans (ISMPs) depends on having the support of the community. If the public and elected officials have a shared vision for integrating stormwater management with land use planning, funding and implementation are far more likely to follow.

With participation of the regulatory agencies in the visioning process, senior governments are far more likely to support a local government's efforts and less likely to impose burdensome requirements.

Benchmarking a Watershed Vision to an Official Community Plan

An Official Community Plan (OCP) presents a vision of the future, and provides a benchmark for referencing the goals and objectives of the stormwater planning process. An OCP is an official statement of policy and reflects community values. A representative OCP Vision Statement is presented below:

“The City shares the goal of sustainable development, and believes that good ecology is fundamental to...preserving the City’s vision of an urban community in a sea of green”

Source: 1990 City of Chilliwack OCP

The purpose of an ISMP is to translate the OCP vision into a stewardship-based watershed vision. Stream stewardship is the act of taking responsibility for the well-being of streams and stream corridors, and carrying out works to protect or restore that well-being.

How Do We Get There?

Protecting property, accommodating growth and development and sustaining natural systems is a balancing act. Achieving this balance through an ISMP process involves a 3-step process:

- ❑ first, there has to be a perceived need
- ❑ this then establishes the goals in developing a strategy
- ❑ finally, implementation requires public support in order to generate political action

To be effective, a watershed (or catchment) strategy must be based on a clear definition of shared goals and realistic expectations for achieving them.

Critical Success Factors for Developing a Watershed Vision

Fundamental ingredients to build consensus and ultimately implement a watershed vision are listed below:

- ❑ **Achievable and Affordable Goals** - Apply a science-based approach to create a shared vision for improving the health of individual watersheds over time.
- ❑ **Participatory Decision Process** - Build stakeholder consensus and support for implementing change, and agree on expectations and performance targets.
- ❑ **Political Commitment** – Secure political agreement on the need for action.

Long-Term Vision and Priorities for Action

A shared long-term vision is required to focus effort. This vision provides a context for all planning, data collection, capital expenditures and regulatory changes that result from an ISMP.

Prioritizing goals and actions (through consensus) provides a roadmap for moving towards the long-term vision.

Providing a Clear Picture of the Watershed Vision

Figure 11-1 provides a picture of the shared 50-year vision for the Como Creek watershed in the City of Coquitlam. This watershed comprises an upper benchland and a lower floodplain. There has been a history of flooding problems in the lowlands. A series of drainage reports on the lowland problems had been completed over a 25-year period. However, the overall picture provided by those reports was complex and confusing.

The first priority was to develop a common understanding of the nature of the problem. Upstream urbanization in the Como Creek watershed has resulted in more surface runoff, flow is concentrated at a single drainage outlet, and the Trans-Canada Highway acts as a barrier that restricts the rate of outflow from the watershed. Once the nature of the problem was understood by all participants, it quickly became possible to reach consensus on how to provide flood relief and restore aquatic habitat.

Figure 11-1 presents the three elements of the Como Watershed Vision, and three supporting actions for one of those elements.

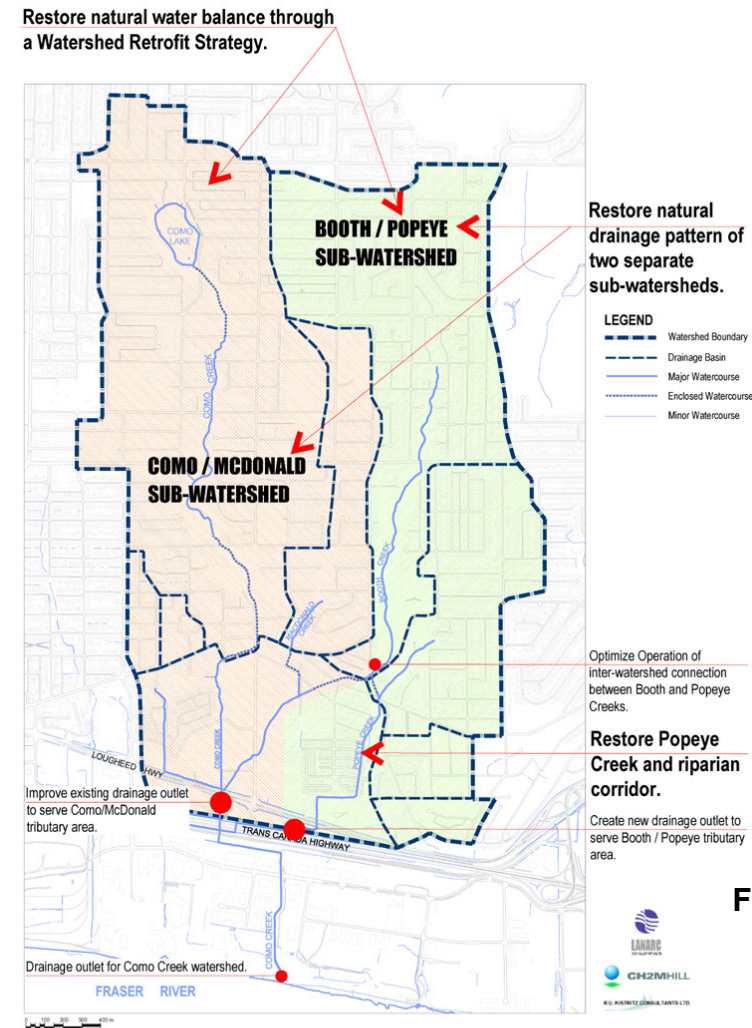


Figure 11-1

SHARED 50-YEAR VISION FOR WATERSHED RESTORATION
City of Coquitlam
COMO CREEK WATERSHED MANAGEMENT PLAN

11.2 Overcoming Barriers to Implementation

Effective integration of engineering, planning and environmental solutions is often discussed but rarely achieved. Figure 11-2 on the next page illustrates the results of an American survey that identified the top ten reasons that decisions fail. The first four relate directly to human behaviour, with the #1 reason being the lack of a ‘decision process’.

Barriers to Change in Local Government

It has been recognized that dealing with stormwater and aquatic habitat issues must be integrated with decisions about land use change. But making this a reality is easier said than done. There are a number of barriers that make bringing about change difficult, including:

- ❑ **Lack of a Champion**
- ❑ Lack of Trust (“Why should I believe you?”)
- ❑ Liability (“What if it doesn’t work?”)
- ❑ Access to Resources (staff and money)
- ❑ Uncertainty About How to Go Forward
- ❑ Attitudinal (“Who cares?” or “Why change?”)
- ❑ Jurisdictional Conflicts (internal and external)
- ❑ Educational (i.e. how new ideas are accepted)

Guiding Principles to Overcome Barriers

The risks and the impacts have become drivers for change in the way stormwater is managed in BC. Once a champion is identified to provide leadership, following these principles will create the momentum needed to build support to implement change:

- ❑ **Build Trust**
- ❑ Solve the Right Problem
- ❑ Avoid Useless Data
- ❑ Manage Risk and Liability
- ❑ Put Interest and Values First
- ❑ Avoid Advocacy Positions
- ❑ Find Lowest Cost Solution
- ❑ Track Progress
- ❑ Ensure Effective Communication
- ❑ Learn from Mistakes
- ❑ Share Lessons Learned

Gaining Political Commitment through Consensus-Building

Bringing about voluntary change by local government involves a systematic process as summarized below:

- ❑ **Demonstrate the Need for Action**
- ❑ Integrate Diverse Perspectives
- ❑ Align Roles and Responsibilities
- ❑ Communicate with Stakeholders
- ❑ Partner with Regulatory Agencies
- ❑ Implement a Participatory Process

Technical people have to demonstrate cost-effectiveness in order to transform political acceptability into the political will needed to implement change and spend money.

Figure 11-2 Most Decisions Fail Because of Organizational Rather than Analytical Issues



11.3 Moving From Planning To Action

The history of drainage is that floods occur, post-mortem reports are written, the sense of urgency wanes, and there is inaction until the next flood serves as a reminder that the issue remains unresolved. This historical reality provides a frame of reference for overcoming the challenges involved in implementing integrated solutions.

Critical Success Factors for Moving from Planning to Action

Bridging the gap between planning and action requires that three critical success factors be in alignment:

- ❑ **Political Commitment** – to take action to integrate stormwater management with land use planning
- ❑ **A Champion Within Local Government** – to provide energy and organizational drive and to stimulate willingness to change
- ❑ **Trust** – between individuals, and between levels of government

Section 11.6 provides guidance for organizing an administrative system and financing strategy for moving from planning to action. The roles and responsibilities of various levels of government, the private sector and the public are defined in Section 11.7.

Integration of OCP and LWMP Processes

The Official Community Planning process is planner-led. The Liquid Waste Management Planning process is engineer-led. Yet the two processes are highly related, and are in fact complementary. This underscores the need for integration to breakdown inter-departmental barriers.

Accomplishing Institutional Change

Risk aversion is usually given as the reason that governments are reluctant to embrace innovation and integrated solutions. However, as demonstrated by Figure 11-2, the #1 organizational factor that results in failure to move from planning to action is the lack of a decision process. Understanding this reality leads to the following principles:

- ❑ **Principle #1: Melt the Opposition** – Obtain commitment from key stakeholders to support change (i.e. new values and beliefs).
- ❑ **Principle #2: Implement the Change** – A good idea is immediate, but preparation for implementation can take 5 to 10 years. Change will then take place quickly (e.g. within 6 months).
- ❑ **Principle #3: Re-Freeze** – Reinforce new values and institutionalize the change.

Principle #1 can only be accomplished through a participatory and collaborative decision process for building consensus as explained in the following sections. A desired outcome is to align the roles and responsibilities of all levels of government to achieve a shared goal.

Organizational Requirements

A lead organization is needed for watershed and drainage catchment planning. The range of possibilities is summarized as follows:

- ❑ local government for larger municipalities
- ❑ regional districts for smaller municipalities and rural areas
- ❑ First Nations on large reserve lands

Other levels of government and stakeholders (besides the lead organization) will be integrated through the consensus process that is discussed next.

A key to future success in ISMP implementation is the ability of departments to communicate with other departments and disciplines to achieve effective changes in the way local governments plan and design neighbourhoods.

11.4 Translating a Shared Vision into Action

A Three-Track Process

ISMP development and implementation requires a three-track process, where technical analysis feeds into working sessions with all stakeholders, and a financing and administration plan is built to support implementation.

- ❑ **Track #1: Technical Products** – Identify watershed characteristics, problems and potential management solutions through a technical analysis process that combines the analytical skills and tools from engineering, planning and ecology. Assess strategies and model implementation scenarios. Computer simulation may help identify what is achievable.
- ❑ **Track #2: Working Sessions** – Present and refine technical products at a series of workshops and working sessions with all stakeholders. These sessions will improve understanding and enable informed, consensus-based decision making regarding a shared, long-term watershed vision, appropriate strategies for achieving the vision and roles and responsibilities for implementation.
- ❑ **Track #3: Finance and Administration** – Organize an administrative system and financial vehicle that is appropriate to the scale of the stormwater management program. In some rural areas, regulation may suffice on its own. In urbanizing areas, a means of collecting and organizing for capital investment and operations will likely be necessary.

Adaptive Process

It is important for all stakeholders to be working towards the same long-term vision (e.g. 50 years) at all stages of the process. The three tracks of effort must work within an adaptive framework to constantly measure success (the effectiveness of technical solutions and progress towards the long-term vision) and optimize management actions.

Integration of Perspectives

The goal and the challenge is to achieve full integration of the engineering, planning and ecological perspectives. The ISMP must be based on science, but it must also achieve consensus among stakeholders at many levels. As a result, Tracks #1 and #2 must happen in parallel to both inform and balance the many perspectives at the table.

Technical analysis in isolation of stakeholder understanding will not survive the agency and political approval processes. Conversely, stakeholder decisions that are made on technically faulty information are at high risk of failure. However, when the two tracks of technical products and working sessions are used together simultaneously, both processes lead to better understanding and better decisions with more stakeholder support.

The remainder of this section outlines how Tracks #1 and #2 work together; Track #3 is discussed further in Section 11-6.

First Priority is to Understand the Watershed

Having an on-the-ground understanding of a watershed is a core critical success factor. Examples of technical products (Track #1) were introduced in Chapter 9 and include:

- ❑ Watershed Base Map - the first building block
- ❑ Watershed Issues Summary - where and what are the identified problems
- ❑ Sensitive Ecosystem Inventory - what is to be protected
- ❑ Concurrent Rainfall and Streamflow Data - how the watershed responds to rainfall
- ❑ Drainage System Inventory - how the conveyance system functions
- ❑ Land Use Map - what are the existing and future generators of runoff
- ❑ Soil Infiltration Map – where might infiltration be feasible

Stakeholder Involvement

There are three tiers of stakeholders:

- ❑ **Group One: ISMP Steering Committee** – comprises inter-departmental representatives from planning, engineering, development services, parks, environmental planning and finance
- ❑ **Group Two: ISMP Focus Group** – comprises representatives from federal and provincial agencies as well as from key community advisory groups (e.g. streamkeepers, neighbourhood associations and local business associations)
- ❑ **Group Three: Watershed Forum** – the general public

Working sessions should typically involve both the Steering Committee and the Focus Group. The objective in having the agencies and others participate in a learning environment is to obtain early buy-in to solutions and strategies. Some technical workshops may involve only the Steering Committee where the focus is to be on contract, property or financial issues.

Watershed Forum

Group Three would be only involved at events where the purpose is essentially information presentation, with limited discussion. The size of Group Three would make it difficult for informal discussion. A more structured approach involving questionnaires and small group breakout sessions could make Group Three consultation more focused and productive.

Collaborative Process

Table 11-1 on the next page outlines how Tracks #1 and #2 work together to achieve understanding of and commitment to the ISMP process.

Table 11-1 Adaptive and Collaborative Process for Translating a Shared Vision into Action

Track #1 – Technical Products	Track #2 – Deliverables for Working Sessions
<p>Step 1 - Basic Mapping and Problem Identification</p> <p>Map ecological, drainage and land use information to identify at-risk catchments where land use change:</p> <ul style="list-style-type: none"> ▪ threatens high-value ecological resources ▪ could cause unacceptable drainage problems. <p>(refer to Chapter 5)</p>	<p>Step 1 - Shared Vision, Goals, and Priorities</p> <p>Develop a long-term vision that is shared by all stakeholders, and establish the key goals and objectives that correspond to this vision.</p> <p>Achieve consensus on a priority at-risk catchment to focus early action, as well as the next priorities for action.</p>
<p>Step 2A - Performance targets and site design criteria for achieving shared goals*</p> <p>Analyze site-specific rainfall data to set performance targets for rainfall capture, runoff control and flood risk management. Translate performance targets into design criteria that can be applied at the site level (refer to Chapter 6).</p> <p><i>*set targets and design criteria for priority catchments first</i></p>	<p>Step 2 – Strategies for achieving performance targets* and long-term vision</p> <p>Achieve consensus on the strategies that would be most practical and achievable in the context of:</p> <ul style="list-style-type: none"> ▪ Local conditions ▪ The needs and interests of all stakeholders <p><i>*appropriate strategies for achieving performance targets should be defined in priority at-risk catchments first</i></p>
<p>Step 2B - Alternative strategies for achieving these targets and design criteria</p> <p>Chapters 7 and 8 provide guidance for selecting appropriate strategies at the land use and community planning level, and at the site design level (including specific examples).</p>	<p>Step 3 - Changes to local development standards and regulations:</p> <ul style="list-style-type: none"> ▪ to require that development and re-development projects incorporate source control (recommend the most effective and affordable options) ▪ to remove regulatory barriers to better stormwater management and land development practices <p>Change must occur through consultation with all stakeholders, particularly developers and landowners.</p>
<p>Step 3A - Implementation and monitoring of demonstration projects in at-risk catchments</p> <p>Test the effectiveness (and affordability) of various site design options, while taking immediate action to achieve priority goals.</p>	<p>Step 4 - Optimize stormwater management actions</p> <p>Improve community planning and site design practices based on stakeholder response to the ongoing assessment process.</p> <p><i>Stakeholder participation is key to defining success and developing indicators of success.</i></p>
<p>Step 3B - Evaluation of local development standards and regulations</p> <p>Identify development standards and regulations that impede better stormwater management and land development practices (e.g. rainfall capture at the source, narrow roads).</p>	
<p>Step 4 - Monitoring of progress towards performance targets and the long-term vision</p> <p>Requires strategic collection of data to track indicators of success and enable ongoing assessment of progress towards performance targets and the long-term vision.</p>	



11.5 Using Working Sessions to Build Consensus

Consensus Explained

There are usually complex trade-offs involved in choosing the appropriate integrated solution. Many of the decisions about choice of solution require judgement – about public values and priorities, about the pace of change, and even about environmental conditions based on the currently available scientific information. Choices, especially, involve balance among competing objectives.

The best tool to find this balance is consensus. The word consensus is defined in many different ways, but a working definition can be ‘the lack of violent objection’.

The same values might be given different emphasis by different stakeholders – engineering, operations, planning, fisheries, land use development, parks, recreation, homeowners, highways or stewardship groups. The differences in values and emphasis usually stem from what we have been taught and what we have experienced. Consensus is important because it incorporates relevant education and experience from all disciplines and all experience at the table.

How Adults Take Up New Ideas and Approaches

Figure 11-3 illustrates how education leads to implementation. The Figure elements can be read in both the horizontal and vertical directions. Education leads to shared, achievable goals. In turn, these goals culminate in action and implementation.

An understanding of how adults learn can help to explain why and how new ideas are accepted, and why some adults accept them faster than others. Learning is a gradual process. Adults take in new information, reflect on it, blend it with their own experience, test it, and eventually apply it in making decisions.

The differences in the way people accept new ideas, and the fact that learning is a gradual process, underscores the necessity and value of workshops and working sessions. Properly structured, they break down barriers, promote communication and transfer of knowledge, and make it possible to bring people along at different rates of acceptance.

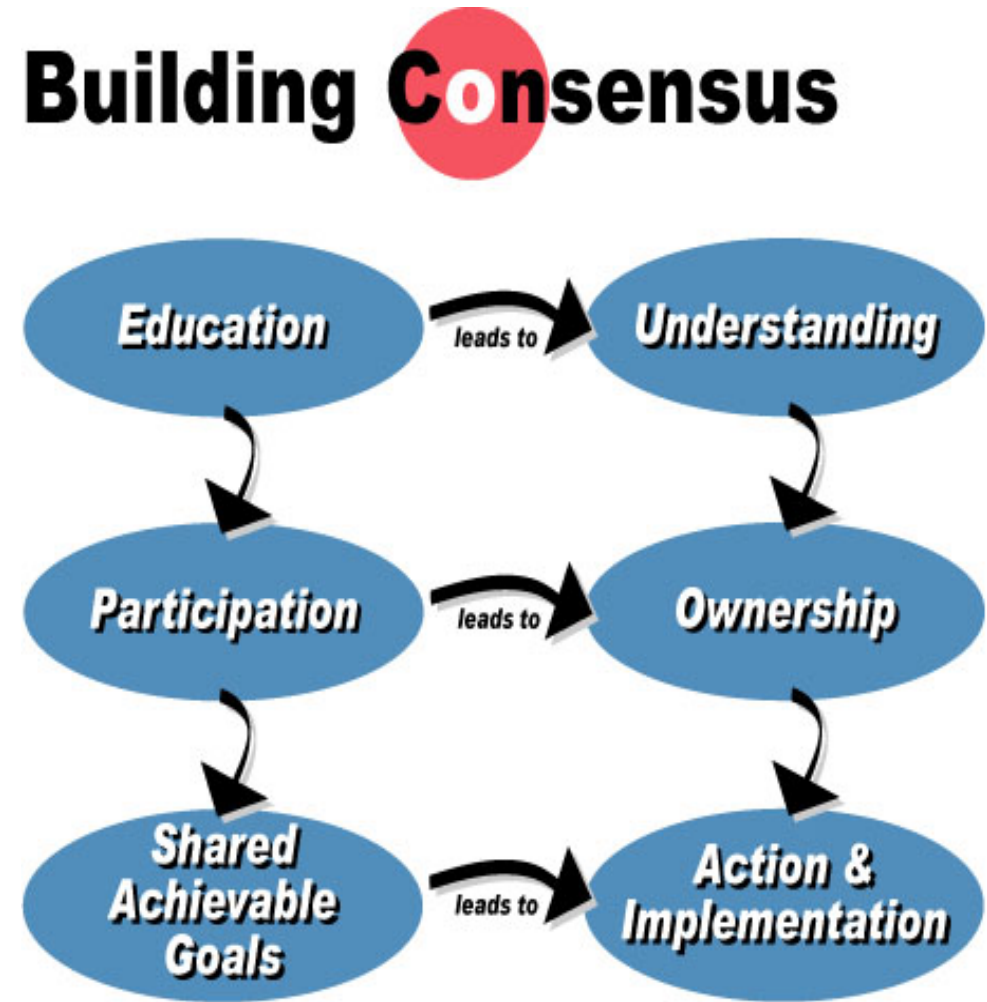


Figure 11-3

Working Sessions Result in Knowledge Transfer

Examples of themes for working sessions to develop consensus around watershed objectives are listed below. Each session would have a product or expected outcome to maintain the focus. Each product is a building block in the broader ISMP process. Since the sessions are interactive, they also provide an effective feedback loop to evaluate the process itself. As well, working sessions facilitate incremental buy-in to a shared vision.

EXAMPLE SESSION THEME	SESSION PURPOSE
Project Initiation and Chartering	Clarify goals, expectations and deliverables
Watershed Issues Workshop	Define issues, needs and driving forces
Hydrology Workshop	Develop a common understanding of issues
Fisheries and Ecology Workshop	Confirm habitat values and limitations
Watershed Vision Workshop	Evaluate performance targets
BMP Workshop	Focus on green infrastructure costs and benefits
Strategy Development Workshop	Develop framework for the integrated plan
Elements of an Integrated Plan - 1	Brainstorm pros and cons of the plan elements
Elements of an Integrated Plan - 2	Reach consensus on the plan elements
Regulatory and Communications Plan	Address regulatory and public awareness roles
Implementation Plan	Finalize plan details

This list is only intended to provide a starting point for customizing an appropriate stakeholder program for individual watersheds or catchments. Based on experience, a minimum of four sessions is usually needed for participants to become comfortable with each other and reach consensus.

Structure and Documentation

The agenda for each working session should state the purpose in meeting, define a set of objectives, and indicate the desired outcome. The session should comprise a series of short presentations of the relevant technical analyses, with each presentation segment followed by a question and discussion period. A facilitator can be useful to keep the sessions focused on the desired outcome. Note that:

- ❑ **Structure** is provided by a set of presentation slides that guide the discussion. These slides can then become part of the record of the session.
- ❑ **Focus** is provided by means of presentation material and/or drawings (i.e. technical products from Track #1).
- ❑ **Documentation** is provided through a short-form and succinct session summary that can be included as an appendix to the ISMP.

Working sessions are an effective forum for sharing information, experience and knowledge. Structured sessions foster a learning environment that results in improved communication that in turn leads to enhanced understanding and acceptance.

11.6 Administering an Action Plan

Developing an ISMP is an intensive and extensive process. There is a lot for the participants to remember. The information would be overwhelming if conveyed in its entirety to elected officials. To make decisions related to ISMP implementation, elected officials need relevant information in a concise format.

Track #3 - Finance and Administration

Section 11.4 outlined a three-track approach to building, planning and implementing integrated stormwater management solutions. Table 11-2 is a checklist that summarizes the scope of what is involved in Track #3 - Finance and Administration. The focus is on creating an action plan that identifies the specific activities or projects that need to be completed. The scope of a watershed-specific action plan is summarized below.

Scope of an Action Plan

From an elected official perspective, the key deliverable for any watershed or catchment planning initiative is the action plan that defines the specific activities required to achieve the long-term vision. It is important to provide the following information for each proposed activity:

- Time-frame for implementation
- Management objectives
- Priority (relative to other action items)
- Who takes the lead role?
- Estimated cost and financing strategy

An action plan should cover the 5-year, 20-year and 50-year implementation timeframes. To illustrate this, an Action Plan that resulted from the City of Coquitlam's Como Creek ISMP is presented in Table 11-3.

Table 11-2 Finance and Administration Protocol for Implementing an Action Plan

1. Review existing administrative systems to identify potential departmental organization for stormwater management.
2. Create a summary Action Plan that identifies the actions or projects that need to be completed.
3. Select or create a lead department for integrated stormwater management.
4. Clearly identify what actions are to be led by which department and related budget requirements.
5. Identify the capital and operating financing required, and relate to schedule and other priorities.
6. Review fundraising options and implications.
7. Obtain political and public review in draft form.
8. Refine the Action Plan.
9. Formalize the Action Plan.
10. Consider and adopt the Action Plan.

Constant Improvement

Action plans should be long-term, corresponding to the time frame of the watershed vision, but must be revisited periodically (e.g. every 5 years) and updated based on the ongoing assessment of progress towards the shared vision. This is the foundation of an adaptive approach.

The 50-year vision reflects the long time frame required for change. Over time, as better development practices evolve and as a watershed is gradually retrofitted with rainfall capture and runoff control measures, it will be important to monitor the success of watershed protection and restoration. This is essential for the adaptive approach to work.

The ongoing assessment process will provide better understanding of the policy, science and site design aspects of integrated stormwater management. This will enable constant improvement of integrated solutions.

Table 11- 3 Implementation Actions for the Como Creek ISMP

Time-frame	Action Items	Management Objective	Lead Role	Budget
	Short-term Flood Risk Management	Provide Immediate Flood Relief		
Short-term (0-5 years)	Improve Lowlands Drainage System a) Remove Booth Creek channel constrictions at and below Lucille Starr Way. b) Expand the rainfall and streamflow monitoring network. c) Build a calibrated hydraulic model for the Lowlands drainage system. d) Upgrade the Booth/Popeye Inter-Watershed Connection. e) Implement the Inter-Watershed Flow Control System at the Trans-Canada Highway. f) Create a separate drainage outlet for Booth Creek under the Lougheed Highway.	a) Eliminate chronic flood overflows onto Schoolhouse Street. b) Monitor watershed changes over time; provide the data needed to calibrate models. c) Develop operating rules for effective flow management in the Lowlands. d) Transfer peak flows and eventually restore two separate sub-watersheds. e) Improve capacity of Como Creek system to reduce risk of flooding above the highways. f) Improve capacity of Como Creek system to reduce flooding; create fish habitat.	Operations Operations Operations Operations Operations	
Short-term (0-5 years)	Upgrade High-Risk Culverts and Provide Bedload Interception a) Upgrade the Como Creek culvert at Rochester Ave. and provide bedload interception. b) Upgrade the Booth Creek culvert at Austin Ave. and provide bedload interception. c) Upgrade the Como Creek culvert at Austin Ave. and provide bedload interception.	a) Reduce risk of localized flooding and potential road washout; reduce downstream deposition. b) Reduce risk of localized flooding and potential road washout; reduce downstream deposition. c) Reduce risk of localized flooding and potential road washout; reduce downstream deposition.	Operations Operations Operations	
Short-term (0-5 years)	Provide Community Storage Facilities a) Implement the Como Lake Storage and Flow Regulation Modifications. b) Construct Popeye Detention Pond on BC Hydro Site.	a) Reduce erosion in Como Creek Ravine; reduce downstream deposition and flooding risk. b) Improve the effectiveness of the Booth/Popeye inter-watershed connection.	Operations Operations	
	Long-Term Watershed Restoration	Eventually Restore the Health of the Watershed		
Short-term (0-5 years)	Identify Targets & Design Options for Source Storage and Infiltration a) Implement the Casey Place Bedload Management Plan. b) Build a calibrated hydrology model for the Como Creek watershed. c) Complete a hydrogeologic investigation of the Como Creek watershed. d) Implement and monitor source storage and infiltration pilot projects on public works. e) Establish a consultation process with landowners and the development community. f) Create an on-line technical manual of options for on-lot storage and infiltration.	a) Reduce bedload deposition and flooding risk in the Lowlands. b) Establish target conditions for long-term watershed restoration; optimize management solutions. c) Identify areas within the watershed that are suitable for infiltration at the source. d) Identify appropriate source storage and infiltration targets and identify the best design options. e) Identify design options acceptable to landowners and developers. f) Make design details for source storage retrofit readily available.	Operations Operations Operations Operations Dev. Services Dev. Services	

Table 11- 3 Implementation Actions for the Como Creek ISMP

Time-frame	Action Items	Management Objective	Lead Role	Budget
Short-term (0-5 years)	Build Support for Watershed Retrofits Through Education a) Provide a self-guided training program including tours, fact sheets, videos and website information. b) Offer training workshops and seminars to the development community. c) Work with other agencies to design a one-day watershed training and certification program. d) Require that all public works staff and contractors become watershed-certified.	a) Educate development community, city staff and public about the need for changes in development practices. b) Educate development community about how to implement changes in development practices. c) Educate city staff about need for changes in development practices and how to implement them. d) Ensure that City staff can lead by example.	Parks & Env Parks & Env Parks & Env Operations	
Short-term (0-5 years)	Change Development Regulations to Ensure that Source Storage Retrofit will Occur in Conjunction with Future Re-development a) Remove barriers to source storage and infiltration in existing development regulations. b) Incorporate the most appropriate targets and design options into the Engineering Standards. c) Incorporate the new Engineering Standards into the Subdivision Bylaw, Building Bylaw, Zoning Bylaw and Development Permit Guidelines.	a) Ensure that the regulatory framework does not discourage source storage retrofit. b) Ensure that the watershed will be restored through source storage retrofit as re-development occurs. c) Ensure that the watershed will be restored through source storage retrofit as re-development occurs.	Dev Services Operations Dev Services	
Short-term (0-5 years)	Demonstrate a Commitment to Watershed Restoration a) Implement a water quality source control program in the Lowlands. b) Implement the East Surge Channel Habitat Bank.	a) Improve water quality in the Lowlands by eliminating sources of leachate. b) Create new fish habitat in the Como Creek system; provide compensation for future projects in the watershed.	Operations Operations	
Medium-term (5-20 years)	Facilitate the Implementation of Source Storage Retrofit Strategy a) Provide expedited approvals on private sector projects that implement source storage. b) Implement a composting program to provide low-cost organic matter for absorbent soils. c) Implement a program for bulk purchase and resale of storage and infiltration products. d) Continuously monitor rainfall-runoff response and other indicators of watershed health.	a) Facilitate approval process for re-development projects that implement source storage and infiltration. b) Facilitate the procurement of absorbent soils needed to provide infiltration at the source. c) Facilitate the procurement of materials needed to retrofit individual re-development projects. d) Assess the effectiveness of the source storage retrofit strategy in achieving watershed restoration.	Dev Services Parks & Env Operations Operations	
Medium-term (5-20 years)	Restore the Natural Watershed Drainage Pattern a) Create a new drainage outlet at the highways for the Booth/Popeye sub-watershed.	a) Achieve the overall vision for two separate sub-watersheds, (Como/MacDonald and Booth/Popeye).	Operations	
Long-term (20-50 years)	Restore Watercourses to Their Natural State a) Restore the Popeye Creek stream corridor between Brunette and Lougheed Highway. b) Daylight the piped section of Booth Creek between Sheridan and Mymam. c) Daylight the piped section of Como Creek below Como Lake. d) Daylight the piped section of Booth Creek below Foster. e) Daylight the piped section of Como Creek below Rochester.	a) Restore healthy aquatic and riparian ecosystems in the Popeye Creek system. b) Restore Booth Creek to its natural state; create a neighbourhood amenity. c) Restore Como Creek to its natural state; create a neighbourhood amenity. d) Restore Booth Creek to its natural state; create a neighbourhood amenity. e) Restore Como Creek to its natural state; create a neighbourhood amenity.	Operations Operations Operations Operations Operations	

11.7 Defining Roles and Aligning Responsibilities

Once there is agreement to move from planning to action, the next step is to define roles and align responsibilities, both for individuals and levels of government.

Local Government

Local governments are the primary players. They control land use decisions, have a comprehensive mandate and are directly accountable to local citizens. Their key responsibilities include:

- ❑ Supporting stormwater management objectives through land use planning and growth management.
- ❑ Changing municipal development standards and regulations (e.g. engineering standards, zoning bylaws, development permit guidelines, etc.) to enable low impact development and stormwater management.
- ❑ Making details of changes readily available to the development community.
- ❑ Financing capital works projects (e.g. drainage system improvements, community detention).
- ❑ Taking a leadership role by implementing demonstration projects for rainfall capture best management practices (BMPs) on public works.
- ❑ Facilitating the procurement of products needed for source-control BMPs.

Senior Levels of Government

Key responsibilities include:

- ❑ Providing financial support through provincial and federal programs.
- ❑ Providing technical support as required (e.g. the Stewardship series of documents).
- ❑ Streamlining the agency approval process.
- ❑ Facilitating integration where stormwater management issues cross jurisdictional boundaries.

The Private Sector

The key role for developers is to incorporate rainfall capture BMPs into development and re-development projects. Developers are ultimately responsible for on-the-ground implementation of low impact development and stormwater management practices at the site level. Developers can also play a key role in finding creative and affordable solutions to achieve stormwater performance targets.

The Public

Building public support through education is key. This public support translates into political will for change. An educated public can stimulate action. All levels of government have a role in building public support through stormwater education initiatives.

Inter-Governmental Co-operation Agreements

Inter-Governmental Co-operation Agreements (IGCA) provide a vehicle for aligning responsibilities among all levels of government. The intent of an IGCA is to bring all parties which share a goal – or who are essential players in achieving other jurisdictions’ goals – together so that they can apply their various mandates, resources, and capabilities to do the job both efficiently and effectively for all concerned. Important principles and factors to consider in developing such agreements are listed below:

1. **Define Reasons for Intergovernmental Collaboration** - Purpose, topic, scope, benefits to be gained (in ‘whereas’ statements).
2. **Recognition of Roles and Responsibilities** - By definition, collaboration is not about hierarchical power-based relationships, but partnerships irrespective of who has power. Acknowledge independence (with respect to constituency and related accountabilities) and then deal with collaboration among independent parties acting with reference to mutual interests.
3. **Principles and points for consideration in collaboration** -
 - ❑ commitment to action with reference to jurisdictional roles, responsibilities and accountability (clarity on who does what, where, when)
 - ❑ partnerships based on strengths and capabilities (co-operation and harmonization with respect to legislation, regulations, policies, programs and projects)
 - ❑ consultation on and confirmation of resources needed to do job (impact assessment of costs and benefits and their incidence and resolution of potential issues regarding funding, liability and resources)
 - ❑ flexibility (to adapt to conditions that may arise in the administration of a collaborative initiative)
 - ❑ notification and consultation (to address any changes that may emerge)
 - ❑ information sharing

- ❑ dispute resolution
- ❑ involvement of civil society (who, how, when, by whom)
- ❑ implementation sub-agreements (to address specific topics or actions)
- ❑ administration of agreement (committee(s) and review process to monitor performance and renew, revise or refine agreement(s))

Local governments have now been unequivocally called on by senior governments and the public to protect fish habitat in British Columbia. Principle-based agreements will receive increasing attention as a key ingredient in achieving multi-jurisdictional community development and stream health protection objectives.

11.8 Creating Change through Public Communication

An ISMP may identify required changes to land use regulations in order to implement a stormwater strategy. But public support and the political system will determine the timing and phasing of those changes.

Furthermore, public attitudes and the ability of the development community to adapt will set the pace of change. The pace can be accelerated by intensive public awareness and information campaigns. Accordingly, a communications strategy is an essential element of an ISMP. Such a strategy starts by determining what type of information and training are needed to support the associated Land Development Action Plan.

Communicating the Need for Change

Once BMPs that are appropriate for a catchment have been selected by consensus, and their target areas identified, it is natural to assume that the ‘job is done’. Although ISMP development may be largely complete, the job of protection and restoration has just begun. Table 11-4 presents guidelines for creating change through public communication to sustain these protection and restoration efforts.

Initial flood risk management may be accomplished largely by government capital projects. However, the long-range reduction of environmental risk in a catchment will require a permanent change in the way that land is developed and/or re-developed. To accomplish this requires fundamental changes in development, construction and operations standards.

This can only be achieved if there is a broad understanding, within the development community in particular, and the public in general, about best management practices – what they are, why they are needed and how they can be practically accomplished. To create this fundamental change requires reaching a large number of people, many of whom may not be a motivated audience.

Table 11-4 Creating Change Through Public Communication

- There are many different audiences (e.g. politicians, various disciplines of professionals and scientists, students of different levels, volunteer groups, homeowners, construction supervisors and machine operators, builders and labourers). Education materials must be appropriate for each audience, in terms of their prior knowledge and their learning level. Educators must understand the audience, and begin at their level of understanding.
- Different people have different learning styles. Some learn best by seeing, others by hearing, and others still by doing. An education program must therefore target each of these learning styles.
- Most adults will not remember a message until they have heard it at least three times, presented in three different ways.
- Awareness fades with time, and as new people enter the system. A message needs to be repeated to refresh memories, increase awareness and to reach new participants.
- The choice of educational media should respect the audience’s preferences, time and available technology.
- Motivation is a key to learning. What’s in it for me? When is the teachable moment? For example, in addition to an awareness workshop, a bylaw review may create a teachable moment. So might a requirement for a permit.

Ingredients to Build Consensus

Public awareness will not be changed in a single event. There is an ongoing need for a stewardship communication campaign that is designed to reach the spectrum of audiences in the watershed. This awareness program needs to allow for repetition and reinforcement over time. A communications campaign needs to draw from the experience of educators. It also includes ingredients of marketing. Both bodies of knowledge support the concepts summarized in Table 11-5.

Change in behaviour comes hard and slow. But adaptable human behaviour has been the secret to human success over the millennia. The key to change lies in understanding why change is necessary.

Effective communication, using a variety of media and a series of events with increasing levels of detail, is fundamental to implementing watershed stewardship. When one considers actions with a 20-year or 50-year time horizon, a communication plan must provide for rapid advances in technology, including increased reliance on the Internet. However, the strategy must also consider the role of traditional school and university education, as well as adult education and 'tail-gate' contractor instruction in creating change.

Table 11-5 Ingredients to Build Consensus

- Respect each other's objectives and responsibilities.
- Use plain English and eliminate jargon.
- Create understanding by using practical examples (e.g. flooding hot spots, developer complaints, Councillor representations, fish kills, etc.).
- Focus on problems and solutions, not on personalities.
- Target solutions to specific areas; many solutions will work in only part of the watershed (e.g. infiltration on favourable soils).
- Target solutions by timeline; some can be achieved immediately, some require 20-year or 50-year time horizons.
- Set clear priorities as a group, based on need and cost-benefit analysis, but also on 'full-cost accounting' that also recognizes non-monetary values.
- Recognize solutions that overlap jurisdictions or disciplines; use this process as a way to co-ordinate across departments; what can not be achieved by one department may be possible with two or more departments working in tandem.
- Give solutions a home; for inter-departmental solutions, it is especially important to define the sub-tasks and roles that each department will contribute in detail; otherwise, there is a chance of inertia or duplication if departmental mandates are unclear.
- Focus on what needs to change; watershed management is so broad, it can feel like everything is being reinvented; focus instead on items that need to change; this might mean a series of minor wording changes to bylaws, or relatively minor changes to construction practices that are phased in as the industry is educated to be prepared for them.